

24. (New) The scanner of claim 23 wherein said program instructions cause said CPU to sense calibration signals in scan data corresponding to each of said spaced-apart sensors, to determine a compensation to be applied to said scan data before attempting to decode the plural-bit steganographic watermark information therefrom.

REMARKS

After entry of the foregoing amendment, claims 3-10 and 13-24 are pending in the application.

The references to 'internet' have been changed to "Internet," as requested by the Examiner. Likewise, the definite article "said" has been substituted for the definite article "the" in certain of the claims, as requested by the Examiner. No change in scope is intended by these changes.

Claims 1, 2, 11 and 12 have been canceled. Claims 3 and 10 have been rewritten in independent form. Claims 13-24 are newly added.

Reconsideration of the claims is requested.

Concerning claims 3-5, applicants respectfully submit that the Office has not met its burden of establishing obviousness. Even if teachings from the references are selectively excerpted and combined, elements of the claims would be missing, including:

- In claim 3, processing data from first and second spaced-apart 2D sensor arrays for a purpose in addition to sensing scanner motion.
- In claim 4, processing data from first and second spaced-apart 2D sensor arrays for a purpose including beginning a watermark detection process before data from the linear sensor array is finally processed.
- In claim 5, processing data from first and second spaced-apart 2D sensor arrays for a purpose including beginning to sense a watermark calibration signal.

Moreover, even if the cited art taught such elements, the art fails to provide the requisite suggestions or motivations leading to the particular combinations claimed.

The Action stated that claim 6 was rejected, but no reasoning in support of this rejection was offered.

Concerning claims 7-9, the art again fails to teach elements that form part of the claimed combinations, including:

- In claim 7, processing data from first and second spaced-apart 2D sensor arrays for a purpose including quantifying an object surface characteristic, so that a filter can be applied to the scan data in accordance therewith.
- In claim 8, processing data from first and second spaced-apart 2D sensor arrays for a purpose including assessing relative distance to the object from different portions of the scanner.
- In claim 9, processing data from first and second spaced-apart 2D sensor arrays for a purpose including quantifying an affine distortion in the scan data, so that compensation may be applied therefore.

Again, even if the cited art taught such elements, the art fails to provide the requisite suggestions or motivations leading to the particular combinations claimed.

New claims 13-24 are added to more fully protect applicants' inventive work. Each is phrased in Jepson format, with the preamble describing prior art of the type illustrated by cited patent 6,199,753 to Tracy.

IDS

With the January 30 Action, Applicants received both a photocopy and the original of the Examiner-initialed IDS form filed by applicant on December 14, 2000. In case the original was to have been retained in the Office file, it is being returned herewith.

Favorable reconsideration and passage to issuance are solicited.

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Respectfully submitted,

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CHANGES MADE TO SPECIFICATION

Page 1, lines 4-5:

Various technologies have been proposed for linking from physical media (e.g., magazine advertisements) to the [internet] Internet.

Page 2, lines 19-21:

A further enhancement to the CapShare scanner is to provide a wireless [internet] Internet interface for interface 22, permitting direct communication between the device 10 and the [internet] Internet.

Page 3, lines 24-30:

In some embodiments, the watermark processing operation(s) occurs without user intervention – each time the raw scan data is processed and remapped into final-result form. In other embodiments, the watermark processing is invoked in response to a user command entered through the user interface 20. In still other embodiments, the watermark processing is invoked in response to a command provided to the scanner from an associated auxiliary device 24 (e.g., a local personal computer, a remote server computer, a specialized [internet] Internet appliance, etc.).

Page 4, lines 6-13:

A watermark decoded by the scanner can be presented to the user on the scanner's LCD display 20. Or the scanner can forward the decoded watermark to a remote device 24, which can then reply with supplemental data for presentation to the user. (Such arrangements for providing [internet-based] Internet-based content and controls in response to decoded watermarks are more particularly detailed in the present assignee's cited patent applications. In such applications, the scanner may serve the role of the client device, or the "originating device" as that term is used in the System For Linking From Objects To Remote Resources patent application.)

Page 6, line 28 through page 7, line 4:

As earlier described, once the identifier information is extracted from the image data, [internet] **Internet** links can be based thereon to provide supplemental information, e-commerce opportunities, etc. In many implementations, the scanner UI 20 is used to present this supplemental information to the user, e.g. by software instructions that render HTML instructions for presentation on the UI display screen. The UI controls (e.g., buttons) can likewise be used to receive user instructions and commands, for linking back to the [internet] **Internet**.

Abstract:

A scanner is programmed to extract a machine-readable identifier (e.g., encoded in watermark or barcode form) from an object, and transmit same to a remote computer (e.g., over the [internet] **Internet**). The remote computer responds with supplemental information or e-commerce opportunities relating to the scanned object. This information may be presented on an LCD display built-in to the scanner. In some embodiments, auxiliary CCD sensors are provided in addition to the scanner's usual image sensor. These auxiliary sensors can be employed for various purposes, including identifying surface texture characteristics so that corresponding filtering/processing of scan data can be performed; detecting affine transformations of the object being imaged so appropriate compensations can be applied, etc., etc.

CHANGES MADE TO CLAIMS

Claim 1: canceled

Claim 2: canceled

3. (Amended) [The scanner of claim 1 in which the] In a scanner including a CPU, a memory, a linear sensor array, and first and second spaced-apart 2D sensor arrays serving as motion encoders, the CPU serving to process raw scan data collected by the linear sensor array from an imaged object into final scan data in accordance with scanner motion data provided from said 2D sensors, an improvement comprising software instructions in the memory causing the scanner to discern a machine-readable identifier from scan data acquired from the object, wherein said software instructions cause the CPU to process data from the 2D sensor arrays for a purpose in addition to sensing scanner motion.

7. (Amended) The scanner of claim 3 in which said purpose is to quantify an object surface characteristic, wherein a filter can be applied to [the] said scan data in accordance therewith.

9. (Amended) The scanner of claim 3 in which said purpose is to quantify an affine distortion in the scan data, so that compensation may be applied [therefore] therefor.

10. (Amended) [The scanner of claim 1 in which the] In a scanner including a CPU, a memory, a linear sensor array, and first and second spaced-apart 2D sensor arrays serving as motion encoders, the CPU serving to process raw scan data collected by the linear sensor array from an imaged object into final scan data in accordance with scanner motion data provided from said 2D sensors, an improvement comprising software instructions in the memory causing the scanner

to discern a machine-readable identifier from scan data acquired from the object, wherein said identifier is steganographically encoded as a digital watermark.

Claim 11: Canceled

Claim 12: Canceled

13. (New) In a scanner comprising a multi-element sensor array, a memory, a CPU, and a visual output device, the scanner producing scan data from signals provided from the sensor array, the memory including program instructions causing the CPU to control the visual output device, at least in part, in accordance with information decoded from the scan data, an improvement wherein the program instructions further cause the CPU to:

employ a first technique to examine said scan data for the possible presence of steganographic watermark data; and

if such possible presence is found, employ a second technique to attempt to decode plural-bits of steganographic watermark information from said scan data.

14. (New) The scanner of claim 13 in which the first technique comprises examining said scan data for the presence of a calibration signal

15. (New) The scanner of claim 13 in which the first technique comprises examining a frequency content of said scan data.

16. (New) In a scanner comprising a multi-element sensor array, a memory, a CPU, and a visual output device, the scanner producing scan data from signals provided from the sensor array, the memory including program instructions causing the CPU to control the visual output device, at least in part, in accordance with information decoded from the scan data, an improvement wherein the program instructions further cause the CPU to:

employ a first technique to examine said scan data for attribute information useful in guiding possible subsequent decoding of the scan data to discern plural-bit steganographic watermark information therefrom; and

employ a second technique to attempt to decode plural-bits of steganographic watermark information from said scan data, said second technique being determined at least in part by said attribute information.

17. (New) The scanner of claim 16 wherein the first technique comprises examining a frequency content of said scan data.

18. (New) The scanner of claim 16 wherein the first technique comprises examining said scan data to determine texture information.

19. (New) In a scanner comprising a multi-element sensor array, a memory, a CPU, and a visual output device, the scanner producing scan data from signals provided from the sensor array, the memory including program instructions causing the CPU to control the visual output device, at least in part, in accordance with information decoded from the scan data, an improvement wherein the program instructions further cause the CPU to:

employ a first technique to identify one or more portions of said scan data that appear most promising for decoding steganographic watermark data therefrom; and

employ a second technique to attempt to decode plural-bits of steganographic watermark information from the scan data, said second technique particularly considering a portion identified by the first technique.

20. (New) The scanner of claim 19 wherein the first technique comprises identifying a portion of said scan data that is sampled at a higher sampling rate than other portions.

21. (New) In a scanner comprising a multi-element sensor array, a memory, a CPU, and a visual output device, the scanner producing scan data from signals provided

from the sensor array, the memory including program instructions causing the CPU to control the visual output device, at least in part, in accordance with information decoded from the scan data, an improvement wherein:

the scanner comprises two spaced-apart multi-element sensor arrays; and
said program instructions cause said CPU to exploit the different views of an object being scanned to improve the decoding of information from said scan data.

22. (New) The scanner of claim 21 wherein said program instructions cause the CPU to determine an optically-sensed attribute corresponding to each of the spaced-apart multi-element sensor arrays, and to use said attribute in determining a compensation to be applied to said scan data prior to decoding of the information therefrom.

23. (New) The scanner of claim 21 wherein said program instructions cause the CPU to attempt to decode plural-bit steganographic watermark information from said scan data, exploiting said different views.

24. (New) The scanner of claim 23 wherein said program instructions cause said CPU to sense calibration signals in scan data corresponding to each of said spaced-apart sensors, to determine a compensation to be applied to said scan data before attempting to decode the plural-bit steganographic watermark information therefrom.